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EXAMINER	
KARIMI, PEGEMAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,968	FERGASON, JAMES L.	
	Examiner	Art Unit	
	PEGEMAN KARIMI	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11,13-21,24,28,29,31,32 and 34-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-11, 13-21, 24, 28, 29, 31, 32, 34-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 12/01/2008 has been entered and considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-7, 16, 17, 19, 20, 32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christie (U.S. Patent No. 6,593,957) in view of DeGroof (U.S. Patent No. 5,598,282).

As to claim 1, Christie teaches a display system comprising:

a pair of displays (displays of lamps 200r and 200l), and

a beam splitter (207) so positioned relative to the two displays at the bisectrix of said angle (as can be seen in Fig. 3 the beam splitter is located at the bisectrix of the two displays) to combine images from the displays (the two images of the displays are combined as can be seen with the black and dotted arrows) whereby one image is transmitted by the beam splitter (the black arrow from 200l is transmitted) and the other image is reflected by the beam splitter (the dotted arrow is reflected by the beam

splitter) to provide direct view of images from the displays (the beam splitter directs both images in parallel).

Christie does not mention the displays being at an obtuse angle to each other.

DeGroof teaches the displays being at an obtuse angle to each other (Fig. 3C, col. 2, lines 63-64). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the angle between the displays to be an obtuse angle of DeGroof to the display system of Christie because in order to have a normal viewing the displays are opened to an obtuse angle (col. 2, lines 66-67).

As to claim 3, DeGroof teaches the displays are at an angle greater than 90 degrees to about 170 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 4, DeGroof teaches the displays are at an angle of from about 110 degrees to about 140 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 5, DeGroof teaches the displays are at an angle of approximately 120 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 6, Christie teaches the displays are flat panel LCDs (col. 9, lines 9-12).

As to claim 7, Christie teaches the displays each have a polarized light output (col. 9, lines 13-14), the polarization for both displays being the same (both output polarizations of the image LCDs are in orthogonal directions); and

wherein the images can be separated based on polarization (as can be seen in Fig. 3, the polarized lights are outputted from 205r and 205l, these two polarized lights are separated and are combined with a beam splitter).

As to claims 16 and 35, Christie teaches a method of displaying stereo images, comprising:

simultaneously (the image beams are polarized at the same time) displaying a left image on a first display (image of 200l is displayed from 205l) and a right image on a second display (image of 200r is displayed from 205r) such that the left and right images have the optical polarization in the same direction (col. 9, lines 13-14), and

using a beam splitter (207) so positioned relative to the first and second displays (see fig. 3) that one can be viewed directly through the beam splitter (the beam indicated by a black arrow outputted from 205l) and the other can be viewed by reflected light from the beam splitter (the beam indicated by a dotted arrow outputted from 205r)

combining those images in a common light path (the two beams are combined and are transmitted in parallel) such that the optical polarization of the left image portion and the right image portion are different (col. 9, lines 31-33) in such common light path

such that the image portions can be separated based on optical polarization (displaying the right-eye and left-eye image), (col. 9, lines 9-12).

Christie does not mention the displays being at an obtuse angle to each other.

DeGroof teaches the displays being at an obtuse angle to each other (Fig. 3C, col. 2, lines 63-64). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the angle between the displays to be an obtuse angle of DeGroof to the display system of Christie because in order to have a normal viewing the displays are opened to an obtuse angle (col. 2, lines 66-67).

As to claim 17, Christie teaches discriminating the respective images in the common light path using optical polarization (205r displays the right-eye image and 205l displays the left-eye image), (col. 9, lines 9-14).

As to claims 19 and 36, Christie teaches a method of presenting a stereoscopic image for viewing, comprising:

presenting a left eye image on a display (image outputted from 205l),

presenting a right eye image on another display (image outputted from 205r)

both said presenting steps presenting such images having optical polarization in the same direction (both output polarizations of the image LCDs are in orthogonal directions, col. 9, lines 13-14), and

using a beam splitter (207) that is so positioned relative to the two displays (the beam splitter is positioned between the two displays, see fig. 3) combining in a substantially common light path (the two beams are combined and turned into a parallel form) the respective images such that the respective images in the common light path have different optical polarization (col. 9, lines 32-33), (polarization in a vertically and horizontally orientation), whereby

the images can be separated based on polarization so that one image can be viewed directly through the beam splitter by one eye (the beam represented by Black arrow is polarized by LCD 205l and displaying the left-eye image) and the other can be viewed by reflected light from the beam splitter by the other eye (the beam represented by dotted arrow is polarized by LCD 205r and displaying the right-eye image).

Christie does not mention the displays being at an obtuse angle to each other.

DeGroof teaches the displays being at an obtuse angle to each other (Fig. 3C, col. 2, lines 63-64). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the angle between the displays to be an obtuse angle of DeGroof to the display system of Christie because in order to have a normal viewing the displays are opened to an obtuse angle (col. 2, lines 66-67).

As to claim 20, Christie teaches discriminating between the left eye image and right eye image for viewing by respective left and right eyes the respective left and right

eye images from the light in the common light path (205r displays the right-eye image and 205l displays the left-eye image), (col. 9, lines 9-14).

As to claim 32, Christie teaches a system providing a pair of superpositioned images separable by polarization (col. 9, lines 9-14), (images from LCD 205r and 205l), comprising two liquid crystal display panels (205r and 205l), and

a beam splitter at the bisectrix of the angle (beam splitter 207, see fig. 3).

Christie does not mention the displays being at an obtuse angle to each other.

DeGroof teaches the displays being at an obtuse angle to each other (Fig. 3C, col. 2, lines 63-64). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the angle between the displays to be an obtuse angle of DeGroof to the display system of Christie because in order to have a normal viewing the displays are opened to an obtuse angle (col. 2, lines 66-67).

As to claim 34, Christie teaches each liquid crystal display panel (205l and 205r) is of a size and shape (size is large enough to be placed in front of 200r and 200l), (flat shape to direct light in a straight line toward beam splitter) capable of providing a directly viewed image (the light beams are directly projected on the beam splitter 207 and are then combined in parallel to be directed to the viewers eyes).

4. Claims 8-11, 13-15, 18, 21, 28, 29, 31, 37, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christie in view of DeGroof and further in view of Jachimowicz (U.S. Patent No. 4,995,718).

As to claims 8, 28, and 37, Christie teaches a display system comprising:

a pair of displays (displays of lamps 200r and 200l),

having a polarized light outputs (col. 9, lines 13-14), the polarization for both displays being the same (both output polarizations of the image LCDs are in orthogonal directions); and

a beam splitter (207) so positioned relative to the two displays at the bisectrix of said angle (beam splitter is located at the bisectrix of the two displays, Fig. 3) to combine images from the displays whereby one image is transmitted by the beam splitter (the black arrow represents polarized output light and is transmitted by the beam splitter 207) and the other image is reflected by the beam splitter (the dotted line arrow represents polarized output light and is reflected by the beam splitter 207) to provide direct view of images from the displays (the polarized lights are re routed for a direct view as can be seen in Fig. 3); and

the LCDs (col. 9, lines 9-12).

Christie does not mention the displays being at an obtuse angle to each other.

DeGroof teaches the displays being at an obtuse angle to each other (Fig. 3C, col. 2, lines 63-64). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the angle between the displays to be an obtuse angle of DeGroof to the display system of Christie because in

order to have a normal viewing the displays are opened to an obtuse angle (col. 2, lines 66-67).

Christie and DeGroof do not mention right and left circular polarized light.

Jachimowicz teaches wherein the polarization is modified by adding quarter wave plates (48, Fig. 2), respectively, to the light paths (e.g. 20 and 16) so that the images from the respective displays as viewed via the beam splitter (22) are separated by right and left circular polarized light (col. 3, lines 57-59). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added the right and left circular polarized light of Jachimowicz to the display system of Christie as modified by DeGroof because to provide the viewer with a full color 3D image screen (col. 3, lines 65-66).

As to claim 9, Jachimowicz teaches circular polarization is created by a single quarter wave plate (col. 3, lines 57-59) located between the beam splitter and the eye of a viewer (as can be seen in Fig. 2, the quarter wave plate is between the beam splitter and the eye of a viewer).

As to claim 10, this claim differs from claim 8 only in that the limitations "wherein the images can be separated based on polarization"; and "wherein the polarization for both displays is circular" are additionally recited.

Jachimowicz teaches wherein the images can be separated based on polarization (images are separated to left and right circular polarization) and wherein the polarization for both displays is circular (col. 3, lines 57-58).

As to claim 11, Jachimowicz teaches the beam splitter combines images from both displays (e.g. red and green image displays) to provide viewable overlapping images (projection lens causes the viewable images to overlap and displays the image on the screen) that respectively have circular polarization in opposite directions (linear polarizations may be converted to left and right circular polarization).

As to claim 13, DeGroof teaches the displays are at an angle greater than 90 degrees to about 1 70 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 14, DeGroof teaches the displays are at an angle of from about 110 degrees to about 140 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 15, DeGroof teaches the displays are at an angle of approximately 120 degrees relative to each other (the displays have an angle between 90 and 120 degrees), (col. 2, lines 66-67).

As to claim 18, Jachimowicz teaches the images are color images (e.g. red, green, blue), each being composed of an assemblage of lines of different respective colors (20, 16, and 26), and wherein

the color image from the first display is an arrangement in a one sequence (color image red is in an "s" polarization sequence) and the color image from the second display is in an arrangement in the opposite sequence (color image green is in a "p" polarization sequence).

As to claim 21, Jachimowicz teaches inverting the image data for one of the images (e.g. inverting the image data for the red image display by projection lens) for presenting for viewing in substantially superposed relation to the other image (the green image data is not inverted and now is located over the inverted red image data, see fig. 2).

As to claim 29, Christie teaches the displays each have a polarized light output (col. 9, lines 13-14), the polarization for both displays being the same (both polarizations are in orthogonal directions); and

wherein the images can be separated based on polarization (as can be seen in Fig. 3, the polarized lights are outputted from 205r and 205l, these two polarized lights are separated and are combined with a beam splitter).

As to claim 31, Christie teaches the displays are liquid crystal displays (col. 9, lines 9-12).

As to claim 40, Jachimowicz teaches the light incident on the beam splitter from the two displays (the beam transmitted to beam splitter 22) has circular polarization (circular polarization of "s" and "p") in the same sense, and wherein the images can be separated based on polarization (the images of polarization in "s" are transmitted to the right eye and images of polarization in "p" are transmitted to the left eye).

5. Claims 24 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christie in view of Ohtani (U.S. Patent No. 5,519,485).

As to claim 24, Christie teaches a display system, comprising,

a first display having optical polarization characteristics (LCD 205l),

and having optical polarization characteristics (LCD 205r), (col. 9, lines 29-33),

the second display being at an angle to the first display (there is a 90 degrees angle between the two displays)

a beam splitter (207) at the bisectrix of the angle between the first and second displays (see fig. 3) combining in superimposed viewable relation along a common light path images from the second display with images from a corresponding area of the first display (the beam splitter combines the images outputted from the LCDs 205r and 205l) by transmitting an image from one display (the beam from LCD 205l is transmitted) and reflecting an image from the other display (the beam from LCD 205r is reflected).

Christie does not mention the second display is smaller than the first display.

Ohtani teaches the second display (412) is smaller than the first display (411), (col. 3, lines 64 - col. 4, line 4). Therefore it would have been obvious to one of ordinary

skilled in the art at the time the invention was made to have added the display sizes of Ohtani to the display system of Christie because the second screen serves as to display a stereo image falling within a range displayed by the first display at a second magnification larger than the first magnification (col. 4, lines 4-7).

As to claim 39, Christie teaches at least part of the first display other than said corresponding area is directly viewable (the part of display other than the corresponding area is viewable to a viewer because light from the image LCDs is combined by a beam splitter that directs the light toward a projection lens 210, the projected light is send to the viewer, (col. 9, lines 15-19).

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christie in view of Ohtani, and further in view of Jachimowicz.

As to claim 38, Jachimowicz teaches the beam splitter (22) combines images (images 20 and 16 are combined) while rotating the plane of linear polarization or sense of circular polarized light (the beam splitter combines the image data while a circular polarized light is transmitted to the beam splitter by circular polarizers “s” and “p”). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have added circular polarized light of Jachimowicz to the display system of Christie as modified by DeGroof because to provide the viewer with a full color 3D image screen (col. 3, lines 65-66).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3-11, 13-21, 24, 28, 29, 31, 32, 34-40 have been considered but are moot in view of the new ground(s) of rejection.

The new ground of rejection of DeGroof (U.S. Patent No. 5,598,282) has been added to the above mentioned claims to better describe the obtuse angle.

The new ground of rejection of Ohtani (U.S. Patent No. 5,519,485) has been added to better describe the limitation of the second display is smaller than the first display.

The dependent claims have been addressed in the claims based on the newly added references.

The prior art reference of Iba (U.S. Patent No. 5,982,343) has been withdrawn based on the arguments of the applicant, even though the angle of the reflected image between the two mirrors is in an obtuse angle, the examiner has added the reference of DeGroof to read on this limitation.

The angle between the LCDs of DeGroof is in an Obtuse angle in order to result in a normal viewing.

Applicant argues that Christie does not support that "the polarization for both displays is the same".

This limitation of applicant is broad and can be interpreted based on Christie's teaching that "output polarizers of image LCDs are oriented in orthogonal direction", as the polarization is in an orthogonal direction, which is true for both displays 205r and 205l.

Applicant argues that Christie does not mention or teach "a first display having optical polarization characteristics and a second displays smaller in area than the first area". Christie in col. 9, lines 29-33 teaches that light exiting from image LCDs is polarized vertically or horizontally.

The newly added reference of Ohtani teaches the second display is smaller than the first display.

Inquiry

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGEMAN KARIMI whose telephone number is (571)270-1712. The examiner can normally be reached on Monday-Thursday 9:00am - 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pegeman Karimi/
Examiner, Art Unit 2629
February 27, 2009

/Chanh Nguyen/
Supervisory Patent Examiner, Art Unit 2629